Section 2.4

Cumulative Impacts

2.4 Cumulative Impacts

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land-use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land-use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under NEPA can be found in 40 CFR 1508.7, of the Council on Environmental Quality (CEQ) Regulations.

2.4.1 Related Development Projects

Table 2.4-1 lists the related cumulative development projects that may have a bearing on or contribute to cumulative impacts when taken in context with the proposed action.

Table 2.4-1
Cumulative Development Projects

Related Projects	Description	Type
City of San Juan Capistrano – Local Development Projects		
Capistrano Unified School District (CUSD) Offices	Offices (125,000 gross square feet) located at 33122 Valle Road, which is approximately 2 miles from the project intersection.	Educational facility
Pacifica San Juan (SunCal Development)	Residential housing development consisting of 416 single-family homes and condominiums.	Residential
San Juan Meadows	165 multifamily residential units	Residential
Serra Plaza	Approximately 45,500 square feet of office space.	Industrial
Whispering Hills Estates Planned Community	160 single-family detached residential homes and 15 estate homes (minimum 30,000 square-foot lots) in the West Canyon area. Traffic access to the 15 estate homes in West Canyon will be provided via an extension of Avenida La Mancha. In addition to this development, 10 acres is being considered for a 163-unit apartment development called Villa Montana Apartment Homes.	Residential, Transportation
San Juan Hills High School	High School	Educational facility

Table 2.4-1
Cumulative Development Projects

Related Projects	Description	Type
J Serra Catholic High School	High School	Educational facility
Honeyman Ranch: Rancho Madrina	Residential estate home community comprised of 119 single-family detached homes	Residential
Ortega Ranch Offices	Offices comprising of 143,225 square feet of rentable office space divided among 11 buildings.	Industrial
Mammoth Offices	Two-building office complex comprising 103,832 square feet of office space.	Industrial
Ortega Animal Care Center	Veterinary care center.	Commercial
Reising Law Offices	Office building.	Industrial
Rancho Viejo Office Park	67,720 square feet of medical offices and commercial space.	Commercial
Valle Ranch	44,400 square feet of office space.	Industrial
Belladonna Estates	31 single-family homes on roughly 16 acres of property.	Residential
St. Margaret's Episcopal School Master Plan M & M Petroleum (Capistrano Service Center)	School facility and a 18,455-square-foot church and a 450-seat performing arts center.	Educational facility
Rancho Mission Viejo	14,000 dwelling units and 5.2 million square feet of retail and business uses on 5,848 gross acres, golf course uses on 25 gross acres, and 16,942 acres of open space.	Residential, commercial, recreational, open space
Prima Deshecha Landfill	Proposal for landslide. The remediation is proposing to increase disturbance area for landslide remediation from 800 to 1,078 acres, redesign the de-silting system, supplement the water supply in the Prima Deshecha Canada stream channel, and modify the excavation phasing limits for landslide remediation.	Utility
Hotel Project	20,000 square feet of retail, a 10,000-square-foot restaurant, and a 160-room hotel located east of El Camino Real where the Mission Inn and adjacent vacant parcels are now located.	Commercial,
Ventanas Business Center	241,000 square feet of light industrial office space.	Industrial
Districto La Novia	Mixed-use development comprised of 206 townhomes and 77,825 square feet of commercial retail.	Residential, Commercial
San Juan Toyota	124,000-square-foot addition to the existing service center and parking structure.	Commercial
Caltrans Roadway Projects		
Caltrans EA 0G940K	Soundwalls approximately 660 ft (201 m) long from El Camino Real to Avenue Ramona in San Clemente.	Transportation

Table 2.4-1
Cumulative Development Projects

Related Projects	Description	Type
Caltrans EA 0E5700	This road project is located on I-5 (PM 8.58/9.35) at the Camino Capistrano interchange approximately 0.7 mile south of the I-5/Ortega Highway interchange. This project proposes to install an auxiliary lane and to widen the I-5/Camino Capistrano southbound off-ramp. This project also proposes to widen Camino Capistrano near the ramp intersection in the city of San Juan Capistrano.	Transportation
Caltrans EA 086900	State Route 74 Lower Ortega Highway Widening (EA 086900) proposes to widen State Route 74 (SR 74) from two lanes to four through lanes from Calle Entradero [Kilopost (KP) 1.7/Postmile (PM) 1.0] in the City of San Juan Capistrano (City) to the City /Orange County line (KP 3.0/PM 1.9). The existing SR-74 alignment consists of four through lanes from Interstate 5 (I-5) to approximately 330 ft (100 m) east of Calle Entradero where it transitions to two through lanes.	Transportation
Caltrans EA 0G6300	The Middle Ortega Safety Project (EA 0G6300) is located on Ortega Highway (PM 5.2/13.1) This project proposes to restore the eroded and damaged shoulder; replace all of the existing traffic stripes with inverted thermoplastic traffic stripes; and where conditions allow, create a 1-ft soft barrier on Ortega Highway beginning at PM 5.2 and extending to PM 13.1. This project is completely within state ROW.	Transportation
Caltrans EA 0F5100	The San Juan Creek Scour Project will repair streambed scouring that has exposed and endangered the existing I-5 support columns.	Transportation
Caltrans EA 043214	Upper Ortega widening is located on Ortega Highway (PM 13.30/16.28) from Trabuco Road to the Orange/Riverside County line. This project will widen the roadway for safety purposes along portions of the Cleveland National Forest.	Transportation
SR-74 /Antonio Parkway/La Pata Avenue	This is an intersection improvements project that is currently under construction.	Transportation

2.4.2 Potential Cumulative Impacts

The CEQ regulations governing the implementation of NEPA (40 CFR 1508.7) define a cumulative impact as:

> *The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant action taking place over a period of time.*

The analysis of the cumulative effects of the proposed project also incorporates the suggestions in the CEQ handbook entitled "Considering Cumulative Effects under the National Environmental Policy Act" (January 1970), which is intended as an informational document rather than formal agency guidance.

Based on the CEQ discussion of cumulative effects, the following principles can be applied to the assessment of cumulative effects of the proposed project:

- Cumulative effects typically are causes by the aggregate effects of past, present, and reasonably foreseeable future actions. These are the effects (i.e., past, present, and future) of the proposed action on a given resource *and* the effects (i.e., past, present, and future), if any, caused by all other related actions that affect the same resource.

- When other related actions are likely to affect a resource that is also affected by the proposed action, it does not matter who (i.e., public or private entity) has taken the related action(s).

- The scope of cumulative effects analyses can usually be limited to reasonable geographic boundaries and time periods. These boundaries should extend only as far as the point at which a resource is no longer substantially affected or where the effects are so speculative as to no longer be truly meaningful.

- Cumulative effects can include the effects (i.e., past, present, and future) on a given resource caused by similar types of actions (e.g., air emissions from several individual highway projects) *and/or* the effects (i.e., past, present, and future) on a given resource caused by different types of action (e.g., air emissions and traffic from several different development projects).

The analysis that follows considers the potential cumulative effects, if any, which would result from construction and operation of the proposed project, combined with construction and operation of the related projects, listed in Section 2.4.1.

2.4.3 Environmental Resources for Which No Cumulative Impacts Would Result

Taking into consideration the above-noted past, present, and reasonably foreseeable future related projects that may contribute to cumulative impacts in the context of the I-5/Ortega Highway Interchange Improvement Project, several environmental resources would not be subject to cumulative impacts. These resources are described in the following subsections.

2.4.3.1 Land Use

Alternatives 3, and 5 would be consistent with the San Juan Capistrano General Plan, Southern California Association of Governments (SCAG) 2004 Regional Transportation Plan (RTP) (SCAG, 2004), and the objectives of the Central Redevelopment Plan; however, they would require ROW acquisitions at commercial properties (Alternatives 3 and 5) and San Juan Elementary School (Alternative 5). With proper mitigation measures, impacts to an established educational institution and businesses would not be significant. None of the related projects in the area would have ROW impacts on commercial or school facilities in the project area; therefore, this project would not contribute to cumulative land use impacts. See Section 2.1.1, Land Use, for more information.

2.4.3.2 Community Impacts

The proposed alternatives would not have an adverse cumulative impact on land use, planning, social, or economic considerations or on community services. The proposed improvements would improve the flow of traffic, thereby providing enhanced access between the east and west sides of the City. Thus, the proposed project would have no effect on the community other than to improve access and mobility; therefore, it would not add to cumulative community impacts.

2.4.3.3 Visual/Aesthetics

This project is not anticipated to contribute to cumulative visual impacts. No additional roadway projects are anticipated in the foreseeable future within the visual study area. Some improvements are under study for the I-5/Camino Capistrano interchange improvement project, which is south of the I-5/Ortega Highway interchange, and along portions of Ortega Highway east of the study boundary; however, none of these projects falls within the viewshed of the Ortega Highway interchange improvements, and they would not be visible from the project area.

It can be anticipated that many of the remaining open areas east of the study boundary would develop since roads and other infrastructure elements are already in place. These would also be anticipated to be of the density and styles of the current developments, as required by City zoning requirements.

2.4.3.4 Cultural Resources

The proposed alternatives would not have an adverse cumulative impact on cultural or archaeological resources. Archaeological site CA-ORA-600Ha/CA-ORA-1190 (ORA-

1190) was identified in the Direct APE for the I-5/Ortega Highway Interchange Improvement Project in the City of San Juan Capistrano. ORA-1190 underlies the San Juan Elementary School property, the Community Christian Church property west of the school, and Spring Street south of the school. The site record from 1988 (in ASR Attachment B), showed that the eastern part of the site on the school property is within the direct APE for the project.

An Extended Phase I subsurface investigation was carried out to determine whether intact subsurface archaeological deposits are present within the Direct APE on the school property. The results of the study showed that archaeological site CA-ORA-1190 is not present within the Direct APE. The revised site boundary, based on the absence of cultural material in the backhoe trenches and the presence of subsurface cultural material in Spring Street up to 135 meters east of El Camino Real (O'Neil and Brown 2003) and on the Calvary Chapel property (Brock 1992), is shown on the Study Site Map (Section 7). An updated site record, showing the new site boundary, has been completed (Section 9). Based on these findings, the proposed project would not add to cumulative cultural resource impacts.

2.4.3.5 Hydrology, Floodplains, Water Quality, Wetlands, and Other Waters of the U.S.

Several related development projects have been identified in the project vicinity. When considering cumulative impacts in regards to water quality, the amount of additional impervious surface that is proposed within a particular watershed is a primary concern. Converting natural earth surfaces to paved surfaces contributes to higher runoff rates, and it increases the amount of pollutants entering the receiving waters. The proposed project is anticipated to increase the volume of downstream flow because of the addition of impervious surface area. Depending on the alternative selected, the additional amount of proposed paved surface area ranges from approximately 0.8 to 2.6 acres. Note that the total watershed area for Horno Creek, which is the receiving water body of this runoff, is approximately 2,800 acres (1,130 hectares). The additional impervious area within the watershed makes up only 0.03 to 0.09 percent of this area. This can be expected to translate into minor localized increases in urban runoff within the storm drain system. Because of the lag time between the peak runoff from Horno Creek and that from the freeway runoff, the peak flow from the freeway would have substantially subsided by the time that the watershed peak occurs. This, coupled with the minor increase in impervious surface, results in an insignificant increase in the total peak flow for Horno Creek because of this project.

To avoid, reduce, or mitigate potential storm water impacts, the proposed project would be constructed to minimize erosion by incorporating retaining walls to reduce the steepness of slopes or to shorten slopes; providing cut and fill slopes flat enough to allow revegetation and limit erosion to preconstruction rates; and by collecting concentrated flows in stabilized drains and channels. BMPs would be implemented to reduce the discharge of pollutants from the Department storm drain system. Permanent Treatment BMPs evaluated for this project include detention devices and biofiltration swales.

2.4.3.6 Geology/Soils/Seismic/Topography

The project would be designed to meet current Department standards. Soil loss because of grading and other construction activities is expected to be minimal. No structures would be constructed as part of the build alternatives that would increase the current risk of loss, injury, or death because of ground shaking and other seismically induced effects. The proposed project would not increase the risk of exposing people or structures to potential substantial adverse effects because of seismic activities and seismic-related ground failure beyond the existing level; therefore, the project would not contribute to cumulative geotechnical effects. See Section 2.2.3, Geology/Soils/Seismic/Topography.

2.4.3.7 Paleontology

The project area contains the Capistrano Formation and Quaternary sediments (alluvium and terraces). The Quaternary terrace deposits present are sensitive at all depths greater than three feet below the original topography. The Capistrano Formation present in the project area contains 38 vertebrate fossil localities and is considered fossiliferous throughout.

Avoidance, minimization measures have been developed for Alternatives 3 and 5 to reduce the adverse impacts of project construction on cultural resources to an acceptable level. The measures are derived from the guidelines of the Society of Vertebrate Paleontologists and Caltrans standard best management practices. After project construction is complete, the long-term operation of the project would not present a risk of further disturbance to paleontological resources. While there are several other projects within a 0.5-mile radius of this proposed project that may be under construction at the same time as this project, this project would not contribute cumulative impacts with regards to paleontologic rescouses because of the incorporated avoidiance, and minimization measures discussed previously for this project.

2.4.3.8 Hazardous Waste/Materials

Construction activities associated with the proposed project and other related projects could result in hazardous materials being used or encountered in the field. Hazardous waste materials are shown to be present in several of the proposed ROW acquisitions required for Alternatives 3 and 5. This project would be required to employ best management practices (BMPs) in the transportation, storage, and handling of any hazardous materials encountered and used in their respective construction processes. The project would also be required to follow appropriate procedures for the handling and disposal of such materials if they are encountered in the field. While there are several other projects within a 0.5-mile radius of this proposed project that may be under construction at the same time as this project, this project would not contribute cumulative impacts with regards to hazardous waste and materials because the above BMPs would be incorporated.

2.4.3.9 Air Quality

The proposed build Alternatives 3 and 5 would not have an adverse cumulative impact on air quality in the region. Air pollutant emissions would occur from equipment operation

during project construction and from vehicle movements in the lanes during the operational phase. Emissions of criteria air pollutants (i.e., carbon monoxide [CO], nitrogen dioxide [NO_2], reactive organic gases [ROG], sulfur dioxide [SO_2], particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]) during the operational phase are not expected to contribute to an adverse cumulative impact on regional air quality. The project would not result in significant localized hot spots for CO, PM_{10}, and $PM_{2.5}$ concentrations and is exempt from Mobile Source Air Toxics (MSAT) requirements. Overall, the traffic congestion relief provided by build Alternatives 3 and 5 would result in an improvement over the No Build Alternative in regional and local air quality. As such, the potential for an adverse cumulative impact upon air quality would be minimized with the implementation of Alternative 3 or 5.

Short-term impacts to air quality would occur during the construction phase, and would result in temporary increases in criteria pollutant emissions, but would not have adverse cumulative impacts. Particulate fugitive dust emissions would occur due to demolition and earth-moving activities, and due to off-road vehicular traffic, while emissions of all criteria pollutants would occur from construction equipment. Fugitive dust emissions would be reduced by implementing dust suppression measures. Emissions of all criteria pollutants from construction equipment would be minimized by measures such as using low-emission equipment and low-sulfur fuel, and using emission control technology. Asbestos may occur in the bridge joints of the existing overcrossing, and asbestos emissions may occur temporarily during the widening or demolition of the overcrossing. The survey, notification, and, if required, packaging, storing, transporting, and disposing of asbestos would be conducted according to standard regulatory requirements.

Although several other projects within a 0.5-mile radius of this proposed project may be under construction at the same time as this project, this project would not contribute to an adverse cumulative impact upon air quality with the incorporation of the required avoidance and minimization measures.

2.4.3.10 Noise

The proposed project alternatives would not result in adverse cumulative noise impacts. During construction temporary noise impacts are expected; however, noise generated during construction would be intermittent with varying levels of intensity. There are several other projects within a 0.5-mile radius of this proposed project that may be under construction at the same time. Depending on phasing of the various projects, temporary, cumulative noise impacts may result. These temporary, cumulative impacts would be directly related to construction activities and would therefore cease at the end of the construction period.

Additionally, the long-term operation of the proposed alternatives would not result cumulative noise increases at sensitive receptors in project vicinity. The No-build Alternative's predicted future noise levels are the same as the predicted future noise levels for Alternative 3, and are less than or equal to the predicted future noise levels for Alternative 5 with inclusion of the required noise mitigation,

2.4.3.11 Energy

The proposed project alternatives would not result in adverse cumulative energy impacts. The proposed project is not growth inducing. Upon completion, the proposed project would conserve energy by relieving congestion and contributing towards other transportation efficiencies. Increases in energy use would be limited to those during construction of the project and then return to normal levels subsequent to completion of the project. There is a potential for other projects within a 0.5-mile radius to be under construction simultaneously with the proposed project. However, this project would not have substantial energy impacts contributing towards cumulative energy consumption, because energy saved by relieving congestion and from other transporation efficiencies from the project over its design life will be be greater than the energy consumed to construct the project.

2.4.3.12 Biological Environment

Natural Communities/Plant Species. No recognized type of natural community and no pant of recognized regional importance occurs within the study area; therefore, adverse cumulative effects would not result from implementation of this project.

Wetlands and Other Waters. Refer to discussion under Section 2.4.3.5, Hydrology, Floodplains, Water Quality, Wetlands, and Other Waters of the U.S.

Animal Species. No animal species found within the proposed project footprint has any particular regional importance. In addition, I-5 constitutes an insurmountable barrier against effective dispersal of large mammals from east to west. Similarly, Ortega Highway prevents north-south dispersal. The current extent of development in the study area adjacent to the roadways themselves takes up all shelter that would be essential to a migratory corridor. The study area affords no opportunity for ecologically meaningful passage of large mammals from one area to another; therefore, adverse cumulative effects related to wildlife would not result from implementation of this project.

Threatened and Endangered Species. Listed species do not occur within the boundary of direct or indirect project effects. Designated critical habitat does not include any land within miles of the project study area. Special-status species do not occur within the project study area; therefore, adverse cumulative effects related to wildlife would not result from implementation of this project.

Invasive Species. Standard Department project requirements would be implemented to limit the establishment of invasive species at the project site during construction. No temporary or permanent adverse impacts related to the spread of invasive species are anticipated. A landscaping plan, consistent with the requirement for restoration of native species on embankments and appropriate for the operational requirements of freeway/project location would be developed. Plant selection would facilitate the succession of native plants and limit the proliferation of invasive species. Additionally, the proposed avoidance measures (see Section 2.3 for additional information) would reduce the risk of spreading invasive species in the project area. No adverse cumulative effects related to invasive species would result from this project.

2.4.4 Environmental Resources Having Potential Cumulative Impacts

For the following resources, there could potentially be adverse cumulative effects; therefore, each is discussed, taking into account the relevant related projects. Cumulative effects, which would be temporary in duration, could occur during the construction period. Cumulative effects could also occur once the project is complete.

2.4.4.1 Utilities/Emergency Services/Public Services

Utilities, emergency services, and public services that could potentially be subject to cumulative construction effects would be generally confined to the immediate vicinity of the interchange and the surrounding surface streets. For utilities, the area could extend to larger service areas surrounding the interchange.

Utilities. Gas and water lines run east/west along the north side of Ortega Highway. Alternatives 3 and 5 would require some or all of those utilities to be relocated. Overhead electrical lines are located along the west side of I-5 and the southbound I-5 off-ramp. These facilities, which are located immediately outside the existing Department ROW, stop prior to Ortega Highway and extend westward along the north side of Spring Street. These facilities would require relocation with Alternative 5. Overhead electrical lines located beyond the north side of the bridge span I-5 and terminate at the end of the Spring Street cul-de-sac. This facility would require relocation with Alternative 5.

The relocation process could temporarily interrupt utilities while a changeover from the existing to relocated facilities occurs. It is also possible that construction activities associated with other projects near the I-5/Ortega Highway interchange could also interrupt utilities serving the immediate vicinity. If a service interruption were to occur there simultaneously with an interruption produced by the project construction, this would constitute an additive cumulative impact. The likelihood of such a simultaneous occurrence would be slight, and it would be temporary in duration, perhaps extending for a period of hours. The changeover would affect only the service area connected with utilities subject to relocation; no regional facilities are located in the area. Cumulative effects, if they occur, would be minor and temporary.

Emergency Services. Delays in traffic can be expected during construction. These delays would affect motorist travel times and the response time of emergency service vehicles. Because the interchange improvements would be performed using a staged construction method, vehicle travel across the bridge would be maintained during the construction period; therefore, there would be only minor effects on emergency service delivery during the construction period, consisting of reduced travel speeds through the construction zone. A Transportation Management Plan (TMP) would be designed for this project to identify ways to further reduce emergency service impacts during the construction phase. Cumulative impacts to emergency services could potentially occur if construction of other projects is conducted simultaneously with this interchange project. The TMP for this project would address issues of emergency circulation so that cumulative effects to the delivery of emergency services would be minor and temporary.

2.4.4.2 Traffic & Transportation/Pedestrian and Bicycle Facilities

The proposed project is consistent with the San Juan Capistrano General Plan to facilitate the planned and anticipated growth in the community. Once completed, the project would improve traffic operation at the interchange and support future traffic volumes through year 2030 (Alternatives 3 and 5) for this community. Expected growth in traffic associated with future cumulative development projects would be mitigated with proposed roadway improvements, including the proposed project, the I-5/Camino Capistrano interchange improvement project, and the upper Ortega Highway widening project; however, during construction, temporary impacts to traffic are anticipated.

The related cumulative development projects identified above would be the same for this analysis and for construction effects. The discussion pertaining to Utilities/Public & Emergency Services (Section 2.1.3) also pertains. Construction activity occurring potentially at the same time as the proposed project, including Whispering Hills Estates Planned Community, Belladonna Estates, the Rancho Mission Viejo Plan, Camino Capistrano, and the Upper Ortega projects, may result in cumulative temporary traffic delays of varying magnitude and duration, depending on the timing and location of construction activity. Coordination among the responsible parties would be maintained to reduce the likelihood of significant delays as much as possible, but temporary cumulative additive effects would be expected.

Impacts to pedestrian and bicycle activity would be limited to the project construction period, since pedestrian sidewalks currently run through the project interchange area. Access to these pedestrian crossings would be limited during construction, and cumulative effects would be minor and temporary. See Section 2.1.4, Traffic & Transportation/Pedestrian and Bicycle Facilities.

This page intentionally left blank.